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275 to some part of March 276, Mr. *de Boze* places the death of *Tetricus*, and his consecration consequent upon it, within that time, as what appears to him the most probable. And with that event he concludes his elaborate and curious discourse.

G. C. March 21,
1753.

J. Ward.

XXI. *An Account of a Treatise, presented to the Royal Society, intituled, Flora Sibirica, five historia plantarum Sibiriae tomus secundus, extracted and translated from the Latin of Professor Gmelin, by W. Watson, F. R. S.*

Read April 12,
1753.

THIS volume of the *Flora Sibirica*, now under consideration, contains two hundred and forty pages in quarto, exclusive of the preface, and ninety-eight copper plates very curiously engraved. It was printed at Petersburg in the year 1749.

An account of the first volume of this valuable work was communicated to the Society by my learned and ingenious friend Dr. John Fothergill *, and has been published in the *Philosophical Transactions*: from its title, we are only promised an account of the plants of Sibiria; but Dr. John George Gmelin, its author
at

* See *Phil. Transf.* Vol. XLV, pag. 248.

at that time professor of chemistry and natural history at Petersburg, and now at Tübingen, went much farther, and has given us a very great number of new, curious, and useful observations, concerning the natural history of that vast and unknown region. The abundance of matter, and the limits of an extract, obliged Dr. Fothergill to confine himself, principally to the geographical and meteorological part of the work; but as the contents of the second volume are chiefly botanical, I find myself obliged to take a review of the first volume, to introduce with propriety an account of the contents of the second.

The *Flora Sibirica* contains the plants, which grow spontaneously in a region of vast extent, bounded by the Vralenian mountains on the west, the ocean of Kamtschatka on the east, the *Mare glaciale* on the north, the countries of Kalmucks and Mongoles, and the confines of China on the south. Our author has, among the productions of these countries, interspersed a few plants, collected by that excellent botanist Gerber, near the rivers Don and Wolga, and in the Ukraine; partly because many of the same kind grow in Siberia, and partly from a desire that these curious plants should no longer be concealed from the public. He has given no plant a place, which he himself hath not examined, at least in a dried state, and of which he is not satisfied of its generical character.

The plants of Kamtschatka were collected by two of their company, detached for that purpose. Of these George William Steller is mentioned by our author, with very great respect, for his uncommon zeal and proficiency

proficiency in natural history ; and for his offering himself to go upon an expedition, where he must for a long time, in very unhospitable regions, not only forego all the accommodations of human life, but be frequently liable to the miseries arising from hunger, cold, and the barbarous inhabitants. Of these dangers, to use our author's own words, he was *contemptor strenuus*, and continued several years upon the expedition, sending from time to time to our author large collections and descriptions of such natural bodies, as occurred to him. This excellent person, to the great grief of our author, and to the irretrievable loss of natural history, died on his return home, after having surmounted almost incredible difficulties.

In digesting the plants of the work before us into classes, our author has followed the method of our worthy brother Professor Van Royen of Leyden, published in the *Flora Leydenfis prodromus*. This excellent botanist considers, that all plants may be ranged into twenty classes ; and our author, in consequence of this system, has given five classes in his first volume, *viz.* those which Van Royen intitles, *Palmae*, *Lilia*, *Gramina*, *Amentaceae*, and *Umbelliferae* ; and three classes in the second volume, *viz.* *Compositae*, *Aggregatae*, and *Tricoccae* : the twelve remaining classes therefore are, I presume, to be published hereafter. Our author follows Van Royen's system, not as he thinks it a perfect one, but as it nearly approaches to the order of nature ; and has great relation to our countryman Mr. Ray's method, to which our author had been accustomed ; and differs from it chiefly, inasmuch as it is more complete. Some allowance must be made for custom. He does not

detract from the methods of other authors ; most of them please him ; none of them are without their inconveniencies, and all have their advantages. The great point is, that the species should be well defined, and that each genus should have its essential character. Our author has generally adopted the genera of Linnæus ; some indeed he has taken from Haller ; but wherever he thought it expedient to differ from these great men, he gives his reason ; and when he finds a plant, which cannot properly be ranged under any genus already established, he forms a new one ; in the explanation of which, after the manner of Linnæus, he omits nothing essential thereto.

To the different species, discover'd in this expedition, P. Gmelin has affixed names, after the manner of Linnæus, Haller, Van Royen, and the more modern botanists, which are such, as that from the name of the species the plant may be known. But in what relates to the plants before discover'd, he adopts the names given them by the botanists just now mentioned, and scarce ever forms a new one ; as he thinks a name already received, though but an indifferent one, should be retained, in preference perhaps to a better ; lest the number of synonyms, already too great, should be augmented. To these he usually adds the synonyms of the Bauhins and Tournefort ; and sometimes, for the sake of their figures, those of Morrison, Dodonæus, Plukenet, and Læselius ; and likewise those of the Russian botanists, Messerschmid, Bauxbaum, and Amman. He has also throughout the work carefully separated the varieties of plants from their genuine species, and has laid down the places of their growth, the names given them by the inhabitants,

and

and their application of them to the various purposes of life. The figures of the plants were taken from the life, and are, as far as possible, represented in their natural proportion ; But from these must be excepted those of Gerber, collected near the Don and the Wolga, and some others collected by Dr. Lerche, physician to the Russian embassy in Persia, near Astracan, and even in Persia ; these were delineated from dried specimens : and where-ever the figure does not, to our author's satisfaction, represent the plant intended, by the neglect of the painter or engraver, he apprises you thereof, and endeavours to remedy this defect in his descriptions.

The great end of our knowledge in plants should be the investigation of their properties ; and to this we are frequently obliged to be led, by the application of them among the people, where they are produced. In perusing therefore the *Flora Sibirica*, I have selected a few observations of this kind, which I think not improper to lay before the Society.

The venereal disease has made no inconsiderable progress among barbarous, as well as among the more polite and civilized nations ; and our author has given us two methods of treating that distemper among the inhabitants of Sibiria ; from which, in some degree, an idea may be formed of the state of medicine in those parts of the world. One method is, they give the patient a decoction of a species of *cirsium* *, which

* “ *Cirsium inerme* foliis scabris, lanceolatis, inferioribus ex
 “ sinuato dentatis, squamis superioribus calicum subrotundis, mem-
 “ branaceis.” *Flor. Sibir. Tom. II. pag. 72.*

which grows in those parts, and is described by nobody before our author: in this decoction, when the pains are violent, they add some leaves of a species of *chamærhododendron*, which produces effects similar to opium, by relieving the pain, and sometimes bringing on a delirium. If they are not cured by this decoction, which often happens in an aggravated state of the disease, they then boil a small quantity of sublimate of mercury, with some fat, in a spoon over a candle, mix it with the before-mentioned decoction, and let the patient swallow it. It is no wonder, if, according to our author's relation, this rude method should destroy the patient, and put an end to his life by severe torture, which frequently happens.

The other method of cure given us by our author is a more reasonable one, and is effected by administering a cup-full or two of the decoction of a species of iris * every morning, detaining the patient in bed. Of this they give a greater or less dose in proportion to its operation, which is both by vomit and stool. After having taken it a week, it ceases to have the effect of evacuating; nevertheless they continue it another week; during which time the patient is laid upon a heap of fresh burdock-leaves, and his body is also covered with these leaves, which must be renewed every day. This method is said to cure the disease radically.

Russians, Tartars, and other nations in these parts, eat as food, either boiled in milk, or roasted in the embers,

* *Iris foliis linearibus, corollis imberbibus, fructu trigono, caule tereti. Lin. Hort. Cliffort. p. 19. Flor. Sibir. Tom. I. p. 27.*

Iris pratensis angustifolia, non fætida, altior. C. B. P. p. 32.

embers, various species of the roots of lilies. The Tartars collect and dry the roots of the *dens canis* * of the botanists, and boil them either with milk or broth, and consider them as very nutritious food. This root certainly is in every respect nearly related to Salep.

The Siberian hunters, who kill various animals for their fur, are obliged to go in search of them into the most desert parts of the country, and remain there during their dreadful winters. It happens often, that, from the intenseness of the cold, the leaven, which ferments their bread, is spoiled, and ceases to be of use. In this case they collect the inner bark of the larch-tree, which is very juicy and sweet, and cut it into small pieces, and digest it over the fire in warm water. They then add thereto some rye-flour, bury the whole in the snow, and let it remain there twelve hours; in which time the fermentation begins, and the fæces, which fall to the bottom, made excellent leaven.

Both the Russians and the people of Kamtschatka make great use of the § *sphondylium vulgare hirsutum* of Caspar Bauhin and Tournefort; or, what we usually call, cow-parfnep. According to our author, the plant in question differs in nothing from that species, very frequently met with in the meadows and pastures both of Germany and England, but in its being much larger. This difference of size the Russian kind constantly preserves,

* *Erythronium*. *Linnaei Hort. Cliff.* p. 119. *Flor. Sibiric.* Tom. I. p. 39.

§ *Heracleum foliolis pinnatifidis*. *Lin. Hort. Cliff.* p. 103. *Flor. Sibir.* Tom. I. p. 213. *Sphondylium*. *Rivin. Tab. IV.*

preserves, when planted in the botanic garden. What we generally meet with here in England seldom grows higher than three feet ; whereas the Sibirian plant is double that size. Our author has given us a very exact description of it.

This plant, which has never yet been applied to any useful purpose in these parts of the world, is of very great importance to the Russians and people of Kamtschatka. They indeed apply it to very different uses ; the former distil their brandy * from it ; the latter dry it to eat in winter. As these applications of this plant are, I believe, wholly new to us, and unobserved by any preceding author, I shall lay before you a short history of them.

About the beginning of July the radical leaves are arrived at their greatest size and perfection, of which only the footstalks are used ; though, as far as may be judged from the smell, the stem of the plant is equally valuable. These are stripped of their bark, and suspended in the sun in little bundles ; and as they grow dry, many of these bundles are tied together, and exposed again to the sun, until they have parted with all their humidity. They are afterwards put up in bags, and in a very short time are covered all over with a yellowish mealy saccharine exudation, of the flavour of liquorice ; which, if it is wanted, is shaken off, and used as sugar. The people of Kamtschatka never separate this substance from the stalks, but preserve them together, and eat them themselves, and regale their friends with them, as delicacies.

The

* Spiritum ardentem.

The Russians dry them in the same manner, in order for distillation, and infuse them in proper proportions with warm water, to which they add the berries of the * mountain dwarf-cherry, or those of a species of *vaccinium* §, to promote fermentation. When this is over, they put both the stalks and the liquor, in which they have fermented, into a still, and draw off the spirit as usual. When the distillation is over, they do not throw away the stalks, until they have pressed out their juicy liquor, which is added to fresh stalks to promote their fermentation.

From this spirit first drawn, they by distillation draw off somewhat less than half its quantity, which is very like to rectified spirit of wine, and much more pleasant than corn-spirit.

It must be here observed, that, if either the stalks or leaves of this valuable plant are applied to the skin, they heat and ulcerate it. The people of Kamtschatka however eat the crude stalks, when stripped of their bark, in which their acrimony consists: But if, through ignorance, this bark is stripped off with their teeth, it inflames and vesicates their lips and gums, which will frequently continue a week before they are healed. In consequence of this, some have made the experiment of extracting a spirit from the stalks without stripping them of their bark; and they have found, that they have furnished an equal quantity of spirit with those, which have been stripped: But

* *Chamæcerasus montana* fructu singulari cœruleo. *C. B. P.* 451.

§ *Vaccinia nigra* fructu majore. *Parkins*: 1455. *Vitis idæa* magna quibusdam. *J. B. L.* 518.

But it has been observed, that those, who have drank of this spirit, have scarce escaped with life, and have complained violently of an oppression about the præcordia a long time after.

From the mealy substance, which exudes from the stalks of this plant, a spirit may be prepared; provided that this substance is diluted in a proper quantity of water, and made to ferment: but this is in much less quantity than from the stalks themselves. The fermented liquor likewise they use as wine, and frequently intoxicate themselves therewith. By what accident it was discovered, that this plant would by distillation furnish an inflammable spirit, and for many particulars relating thereto, I must refer you to the work itself; and our author informs us, that the several uses of this plant were collected with great labour by M. Krafskeninikoff, one of their company, from the Cossacks of Kamtschatka.

Dodonæus * relates, that the inhabitants of Poland and Lithuania make themselves a kind of liquor, which the poor people use as beer, from the fermented leaves and seeds of the *Spondylium*. This adds somewhat to the credibility of the former relation.

When Steller, whom our author always mentions with great esteem, was at Tobolski in the year 1738, he was informed, that two years before they were grievously afflicted there with pestilential carbuncles, which were of so contagious a nature, as to seize those, who approached the person affected. The disease first began in horses and oxen, and afterwards seized

* Dodon. Stirp. Histor. p. 304.

feized the human species. A red spot first was perceptible under the armpits, or in the thigh, attended with great itching; and in a few hours grew to a very large tumour, joined with a burning heat of the part affected: These symptoms were attended with a very acute fever, intire loss of strength, violent pains in the head, and redness of the eyes. An old country practitioner, famous in these parts for his judgment, cured persons labouring under this severe disease in a short time. He used first to the carbuncle the powder of an herb *, of which is given a complete history and figure in this work, made into a thin pultice with dregs § of beer: This pultice, gently warmed, was applied to the part affected, and the patient confined to his bed, who was at liberty to take whatever nourishment he liked, except milk, brandy, or the flesh of pikes. During this time the patient drank plentifully of a decoction of this herb, collected during the time of its flowering; though the powder, applied as above, was prepared from the leaves, before the flower-stalk was produced. The carbuncle, from this treatment, did generally break in four-and-twenty hours, and the symptoms greatly abate. The wound was sprinkled with sal ammoniac, and healed in a short time. This disease affected the cattle in different manners; some suddenly set a running

* *Centaurea squamis ovatis, foliis pinnatis, foliolis decurrentibus, linearibus, serratis et integris. Flor. Sibir. Tom. II. p. 89. Tab. XLI.*

Cyanus floridus odoratus Turcicus, seu orientalis major, flore luteo. Hort. Lugd. Bat. p. 211.

§ *Fæce cærevisia*; though I am inclined to think yeast is intended, which is usually written *flos cerevisiæ*, or *fermentum cerevisiæ*.

running with all their swiftness possible, and continued so, till they dropp'd down dead: in others, carbuncles arose, which were dressed by the practitioner before-mentioned with the pultice just now described, mixing at the same time a large quantity of the herb with their food; and by this method great numbers were cured. A plant so well recommended, and which will grow in our own country, deserves to be better known to us.

Thus much may suffice to lay before you some idea of the merit of this work; throughout the whole of which the author has shewn a complete knowledge of the botanic science, among the first professors of which he is deservedly placed. He has given us the descriptions and figures of a great number of plants hitherto not described; and it is to be hoped, that he will continue his diligence in publishing the remaining twelve classes. But he should not stop here; it were to be wished, as so many skilful persons were engaged so long in this dangerous and expensive expedition, that their observations upon the remaining two kingdoms of nature should be communicated to the public; as well as a complete history of their travels into these unknown parts of the world.